

## 1 ABSTRACT

2 [0036] A method and apparatus for the topographical profiling of a raw substrate  
3 is carried out during in-line processing of the substrate during which additional films and  
4 structures have been formed over the raw substrate surface. The method includes  
5 forming a dielectric film over the substrate surface and forming a metal film over the  
6 dielectric film. The structure is polished and monitored during various stages of the  
7 polishing operation. An interferometer is used to monitor the surface being polished  
8 and to distinguish between regions where metal remains and regions in which metal has  
9 been removed and the underlying dielectric material exposed. Topographical data,  
10 such as a substrate map, is generated by monitoring the time at which the metal film is  
11 removed from various spatial locations across the substrate. The substrate map may  
12 be generated during polishing, for in-line monitoring.